

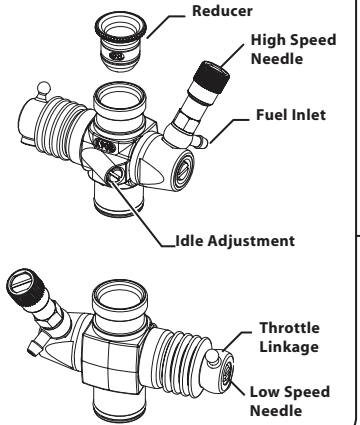


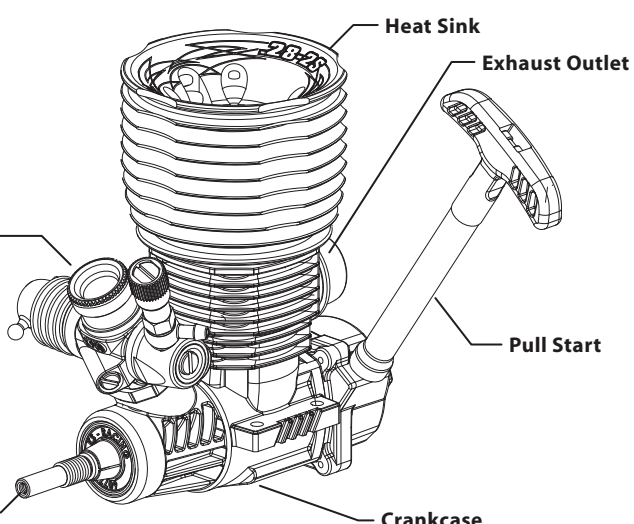
# Spec 2s Nitro Engines

AX0320-I001

## Engine Features

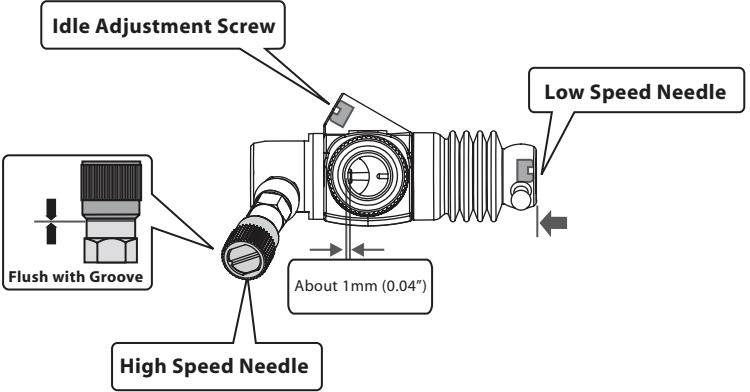
### Carburetor

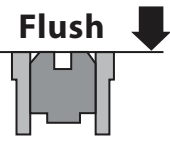




**\*\*NOTE\*\*** Some features and parts may differ depending on which model engine you have.

## Factory Carburetor Settings





**Do not adjust your carburetor. The needles are preset from the factory for engine break in.** The needles are designed to sit flush, this makes it easy to reset them to the factory break in settings. If your engine is already broken in, this setting may be too rich for your engine. If engine is over heating from stock setting please adjust both needles 1 full turn out and continue break in process

## Tuning After Break In

### High Speed Needle

Turn the high speed needle in 1/8 turn increments to lean out the fuel mixture for increased top speed and throttle performance. Drive the car to notice the changes in speed and throttle responses.

### Idle Adjustmen Screw

The idle speed is set after the engine is up to operating speed. To properly set the idle speed turn on your radio and set the throttle trim to neutral. Turn the idle adjustment screw counter clockwise to reduce the idle speed, or clockwise to increase the idle speed. The idle should be set high enough to keep the engine running, but low enough to prevent the clutch from engaging.

### Low Speed Adjustmen Screw

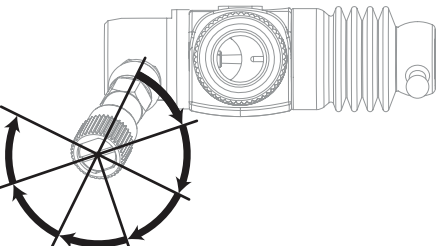
We recommend that you do not touch the low speed needle. If adjustment is needed, the low speed needle is set after the high speed needle is adjusted. If the low speed needle is set too lean you will experience the following:

- 1.Flame out at part throttle
- 2.Overheating

If you experience any of the above, reset to factory settings and start the tuning process over.

### Important

Read this section carefully. Failure to follow these tuning steps could result in damage to your engine and void your engine warranty!



## Warranty

Your Axial engine is warranted to be free from defects in materials and workmanship for a period of two (2) years from date of purchase. If there are any defects with the materials, workmanship, or assembly of your engine, Axial will gladly repair or replace it for you at our discretion. Engines that have been worn out, abused, or improperly operated will not be covered under this warranty.

### Not covered by Warranty:

This warranty does not cover problems from normal wear, abuse, neglect, or any damage arising as a result of improper use, use of improper fuel, overheating, continuous neglect, or crash damage.

Axial shall not be liable for any loss or damages, whether direct, indirect, special, incidental, or consequential, arising from the use, misuse, or abuse of this product and any accessory or chemical to operate this product.

### Servicing:

Any repairs made to engines resulting from neglect or misuse will be charged parts and labor before the work is started. Please contact customer service at Axial for any warranty claims at 949-600-8642. Our customer service hours are Monday through Friday 8:00am to 5:00pm, Pacific Standard Time.

If an engine needs to be sent in, customer service will issue a RMA#. All engine returns require a RMA#.

The engine must be returned complete with crankcase, crankshaft, piston, sleeve, connecting rod, cylinder head, carburetor, and pull starter. You should not return the clutch, flywheel, flywheel collet, nut, air cleaner, manifold, or muffler.

Please contact Axial customer service if you have any issues with your engine.

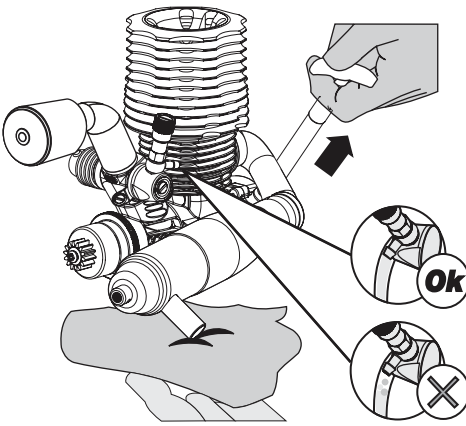
Axial  
21092 Bake Parkway Suite 114  
Lake Forest, CA 92630


## Engine Break In

### Important

The piston and cylinder sleeves are designed to achieve proper running tolerances when they are properly broken in. New engines need a break-in period of about 6-8 tanks before they can be run at full throttle. Be sure to follow all the steps in the break in process or the engine will suffer damage.

### 1 Fill the fuel tank and prime the carburetor





Use of wrong fuel will void the engine warranty.

## 20-30% Nitro

Minimum of 10% oil.

Fill the fuel tank completely. Use only 20-30% nitro content fuel with a minimum of 10% oil. Use a high quality branded model car fuel only. To prime the engine, use a piece of cloth to cover the exhaust tip. Pull the starter cord several times until the fuel reaches the carburetor and no bubbles are seen.

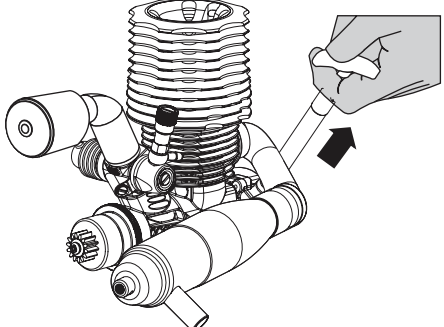
### 2 Adjust the carburetor and start the engine

**Make sure the receiver is switch is off.** Manually turn the throttle servo until the carburetor is 1/4 of the way open.

Attach the glow plug igniter to the engine. Start the engine by pulling the starter cord (**30cm MAX!**).

**Adjust the throttle servo so the engine runs fast enough to idle without engaging the clutch or turning the wheels.**

Run the engine for **three tanks** of gas. If the motor shuts off repeat steps the steps.



### 3 Drive at 1/2 throttle for 3 tanks

The vehicle should not move when idling. If it does, adjust the trim settings on the transmitter.

Drive the vehicle in a 20 foot oval, do not apply more than **1/2 throttle**. Coast for short amounts of time to allow the engine to cool, then accelerate again.

**Continue this process for a total of three tanks of fuel.**

### Tip - Stopping the motor

- 1) Use a Rag**  
Use a rag to cover the exhaust tip. This will stop the motor. Be careful! The exhaust is extremely hot so be sure to use a thick rag.
- 2) Pinch the Fuel Line**  
In extreme cases or emergencies you can pinch the fuel line to stop the flow of fuel to the carb. Be careful, this can make the motor run lean which can damage the motor. It is best to stop the motor using a rag.

### Tuning Tips

While a lean motor will have higher performance, it will lead to premature engine wear and failure. Use the following information to tune your engine to your driving conditions. Remember, a slightly rich setting is a safer setting.

#### + More Fuel = RICH

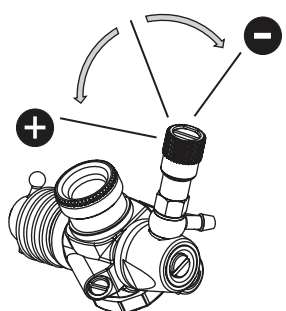
##### Rich Fuel Mixture

A slightly rich fuel mixture delivers a cooler running temperature and more lubrication, but with slightly less power and longer engine life.


#### - Less Fuel = LEAN

##### Lean Fuel Mixture

Provides stronger combustion and power, but if you lean out too much the result is more engine heat and a shorter engine life. Symptoms of an engine that are too lean are sputtering, rough idle, no smoke from the exhaust and hard to restart.



### Carb Reducer



2 carburetor reducers are included with your engine ( 8mm yellow; 8.5mm orange) these are used for restricting airflow. The bigger the insert the more power. The smaller the reducer the lower the power. Use these to tune your engine for your local track conditions.

### Stop Tuning

if your engine shows any of the following signs, please stop your engine and retune to a richer setting. Further running will damage the engine.

1. There is no white smoke when at full throttle
2. The engine hesitates or bogs
3. Reduced top speeds or loss of power
4. Temperatures above 275° F (135° C)

Troubleshooting

Description	Possible Problem	Solution
Engine does not start	Fuel mixture needle settings are out of range	Set the needles to the factory setting
	Engine could be worn out	Replace piston and sleeve
	Out of fuel	Refill fuel tank
	Contaminated fuel	Replace fuel
	Glow plug igniter is not charged	Charge glow igniter
	Glow plug is bad	Replace glow plug
	No fuel flow	Check fuel lines for cracks, leaks, and holes. Replace fuel line if necessary.
	Engine flooded	Remove glow plug and discharge fuel
	Engine has overheated	Allow engine to cool, richen the fuel mixture and then restart
	Throttle valve isn't adjusted properly	Set idle and adjust needle valve to the manufacturers recommended settings
	Air cleaner is blocked	Check air filter. Clean or replace if necessary
	Idle speed is set too low	Adjust the idle speed
	Air bubbles in the fuel line	Check for leaks or cracks in the fuel line
	Glow plug is bad	Replace glow plug
Engine starts, then stalls	Engine is overheated	Allow engine to cool and then restart
	Airflow through system is bad	Check connections between tank, engine and exhaust
	Throttle servo is improperly set up	Set servo to neutral and reset linkages according to radio and model manufacturer's specifications.
	Throttle servo glitch	Replace the radio batteries

Maintenance and Cleaning

Important

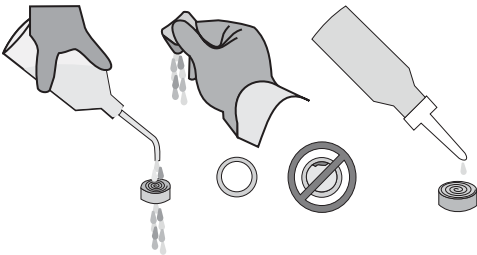
Read this section carefully. Failure to follow proper care and maintenance of your engine could result in damage to your engine and void your engine warranty!

Air Filter

Dirt is the biggest enemy to your engine. Proper air filter maintenance is one of the most important factors that will affect your engines performance and life. We recommend cleaning the element after every run. Please follow the instructions from the manufacturer recommendations on the proper cleaning and maintenance of your filter. Always check you air filter after each run to make sure it is properly seated to the filter body and the carburetor. **Never run your engine without the air filter!**

Cleaning the Air Filter:

Remove the air filter element from the air filter body. It is important to take care during this step to insure no dirt gets inside the carburetor. Flush any dirt from the element using nitro fuel. Squeeze any excess fluid from the element. Apply high quality air filter oil to the element.



Reinstalling the Air Filter:

After properly cleaning the air filter make sure it is reinstalled correctly. Make sure there are no gaps between the air filter and the body. Make sure the air filter body is seated on the carburetor and secure with a tie strap. **Never run your engine without the air filter!**

Engine Storage

Properly maintaining and storing your engine is critical to the life of your engine. Nitro fuel contains castor for lubrication. If the castor is not burned out properly over time it can gum up and damage the crank bearings. Using your fuel bottle, drain all the remaining fuel from the tank. Use a fully charged igniter and try to restart the engine to burn any remaining fuel out of the lines. Repeat this step until the engine will not start. After burning off the fuel remove the glow plug and add several drops of after run oil, then crank the engine over to spread it throughout the engine. To prepare the engine for use, use 70% Isopropyl Alcohol or Denatured Alcohol and cycle it through the engine. **DO NOT TRY TO START THE ENGINE WITH ALCOHOL!** The few minutes you spend to properly care for your engine will add valuable time to its operating life and maintain optimum performance.

Glow Plug

Proper Glow Plug Selection:

Proper glow plug selection depends on several factors. Fuel type, nitro methane content, weather, and altitude can drastically effect performance. Finding the best combination of fuel and plug temperature for your driving condition is the key to getting the maximum performance out of your engine.

Extending the Life of Your Glow Plug:




To maximize and extend the life of your glow plug follow these simple tips:

- Remove the glow igniter when using more than 1/2 throttle or if the engine does not start with a few seconds
- Do not run the engine lean. Lean conditions will overheat the plug causing the element to be damaged or fail
- Use the best Fuel/Plug combination for your driving conditions
- Use a fuel that has lower nitro content

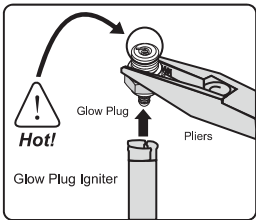
When to Replace the Glow Plug:

Fuel and temperature will have an effect on the performance, reliability, and life span of the glow plug and therefore should be considered expendable engine components. Aside from burnout or plug failure, there are several signs that can indicate the plug should be replaced.

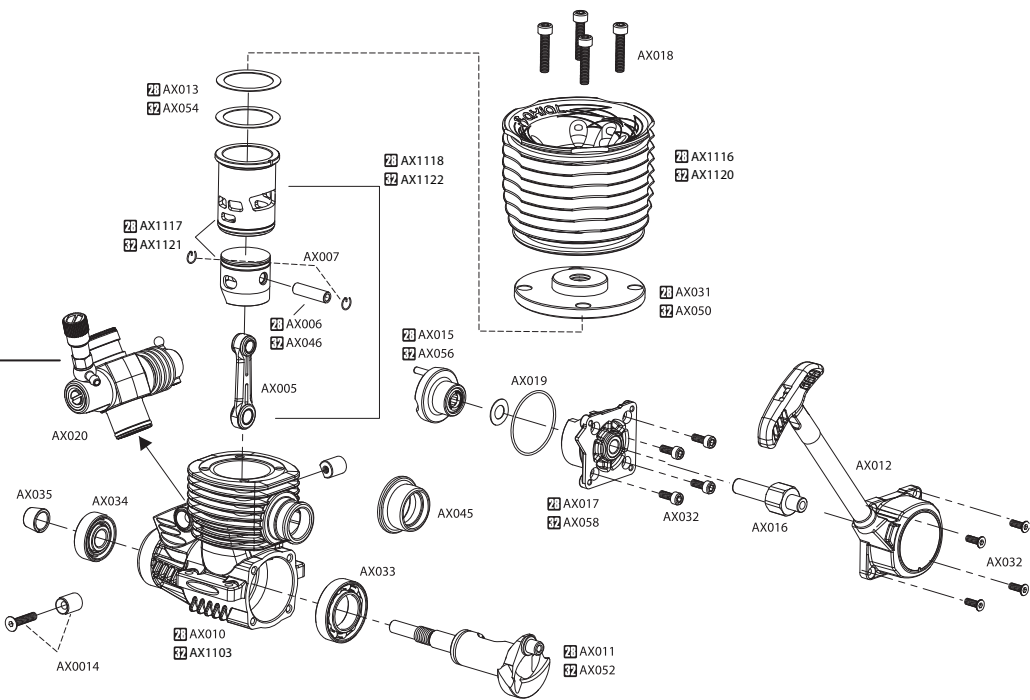
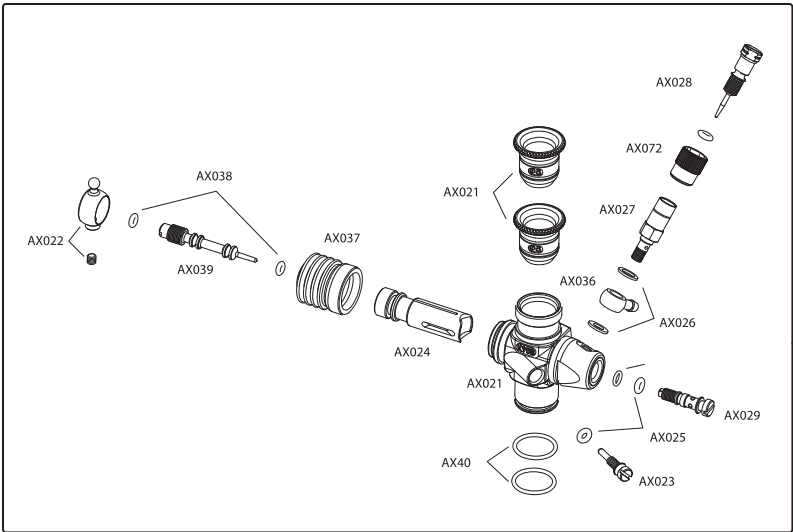
- Plug filament/body is discolored or the surface is rough
- Engine cuts out when idling
- Plug filament is distorted or bent
- Engine becomes difficult to start

Outdoor Temp	Glow Plug
 Cold	<b>Medium - 3</b>  Medium plug for .12-.15/.21 engines
	<b>Medium Cold - 4</b>  Medium cold plug for .25 engines
 Hot	<b>Cold - 5</b>  Cold plug for summer/hot conditions

Glow Plug Testing



Spare Parts



**\*\*NOTE\*\* Some features and parts may differ depending on which model engine you have.**

Number	Description	Number	Description	Number	Description	Number	Description
AX005	28 / 32 Engine Connecting Rod	AX022	28 / 32 Engine Uniball	AX036	28 / 32 Engine Fuel Inlet	AX1116	.28 Spec 2s Heat Sink Head (Green)
AX006	28 Engine Piston/Pin Retainer Set	AX023	28 / 32 Engine Idle Adjustment Screw	AX037	28 / 32 Engine Carb Dust Boot	AXA117	.28-2s Piston/Sleeve Set
AX007	28 / 32 Engine Retainer for Piston Pin (3 Pcs)	AX024	28 / 32 Engine Slide Valve	AX038	28 / 32 Engine O-Ring 2 X 1.5mm (2 Pcs)	AXA118	.28-2s Cylinder/Piston/Connecting Rod Set
AX010	28 Crankcase	AX025	28 / 32 Engine O-Ring Set	AX039	28 / 32 Engine Low Speed Needle Valve	AXA119	28 spec 2s crankshaft
AX012	28 / 32 Engine Pull Start Assembly	AX026	28 / 32 Engine Fuel Line Fitting/Washer Set	AX040	28 / 32 Engine O-Ring 11.5 X 1.25mm (2 Pcs)	AX1120	.32 Spec 2s Heat Sink Head (Green)
AX013	28 Engine Gasket Set (0.15mm/0.3mm)	AX027	28 / 32 Engine High-Speed Needle Valve	AX045	28 / 32 Engine Silicone Exhaust Seal	AX1121	.322s Piston/Sleeve Set
AX014	28 / 32 Engine Lock Pin for Carburetor	AX028	28 / 32 Engine High-Speed Needle with O-Ring	AX046	32 Engine piston pin/retainer set	AX1122	.32-2s Cylinder/Piston/Connecting Rod Set
AX015	28 Engine pull start shaft holder	AX029	28 / 32 Engine Mid Range Needle	AX050	32 Engine Button Head		
AX016	28 / 32 Engine Starting Shaft	AX030	28 / 32 Engine High-Speed Needle Valve Set	AX051	32 Engine crankcase		
AX017	28 Engine cover plate set	AX031	28 Engine button head	AX054	32 Engine Gasket Set		
AX018	28 / 32 Engine Screw	AX032	28 / 32 Engine Pull Start Screw Set (8 Pcs)	AX056	32 Engine Pull Start Shaft Holder		
AX019	28 / 32 Engine Dust Protection Set	AX033	28 / 32 Engine Rear Bearing 14 X 25 X 6	AX058	32 Engine Cover Plate Set		
AX020	28 / 32 Engine Slide Carburetor Complete	AX034	28 / 32 Engine Front Bearing 7 X 19 X 6	AX072	28 / 32 Engine High-Speed Needle Adjuster Cap		
AX021	28 / 32 Engine Slide Carburetor Main Body	AX035	28 / 32 Engine Brass Collet	AX1103	.28RR-2/.32RR Crankshaft		